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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,286	07/12/2000	Hiroshi Tanabe	NECK 17.552	2375

26304 7590 11/08/2002

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EXAMINER

KIELIN, ERIK J

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 11/08/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .		Applicant(s)	
	09/614,286		TANABE, HIROSHI	
	Examiner		Art Unit	
	Erik Kielin		2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/25/02, 8/29/02, and 10/4/02.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3,4,7,12,14</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

This action is in response to (1) the IDS filed 25 July 2002, (2) Amendment B, filed 29 August 2002, Paper No. 16, and (3) the RCE filed 4 October 2002, Paper No. 19.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 29 August 2002 has been entered.

Double Patenting

2. Applicant is advised that should claim 7 be found allowable, claim 5 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article **Im** et al. "Single-crystal Si films for thin-film transistor devices" Applied Physics Letters 70(25) 23 June 1997, pp. 3434-3436 (the article provided by Applicant) in view of US 5,492,843 (**Adachi** et al.)

Regarding claims 1, 5, and 7, **Im** discloses a method for forming a crystalline semiconductor film at a desired position on a substrate comprising,

preparing a substrate having deposited thereon, amorphous (i.e. first property) semiconductor silicon (a-Si);

preparing an optical mask having a pattern thereon and spacing the mask apart from the substrate;

positioning the mask at the desired position;

irradiating the a-Si through the mask pattern to convert the desired exposed regions to polycrystalline and single crystalline (i.e. second property) semiconductor silicon (Figs. 1 and 2 and captions thereunder);

wherein the crystallized silicon film is for the production of thin film transistors TFTs.

(See whole article -- especially the Abstract, paragraph bridging the cols. on p. 3434 and p. 3436, left-hand col., last paragraph.)

Im does not indicate that an insulation film is formed on both the crystalline silicon and a-Si. Regarding claim 8, **Im** also does not indicate that the silicon film is patterned to form crystalline silicon islands. However, **Im** does indicate that the crystallized silicon film --

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especially the single crystal region-- is used to form a TFT which suggests to one of ordinary skill that additional processing to form the TFT will be necessary.

Adachi teaches a method of forming a TFT (Fig. 1A-1E) by blanket depositing a silicon film **53** (Fig. 5A) and then forming an insulation film **54** over the silicon to protect it from contamination during patterning (Fig. 5B) to form Si islands (Fig. 5C) from which the TFT active region is formed (col. 7, lines 26-58).

It would have been obvious for one of ordinary skill in the art, at the time of the invention to blanket deposit the insulation film of **Adachi** over both the a-Si and crystallized silicon of **Im** in order to protect the crystallized silicon film region of **Im** from contamination during the patterning to form crystalline silicon islands on which the TFT active regions are formed. The patterning to form islands is standard in the art for TFT fabrication as shown in **Adachi** and is an obvious modification to **Im** because **Im** teaches that the single crystal silicon region is the best for forming a TFT.

Regarding claims 2 and 9, **Im** shows in Fig. 1 that an alignment mark exists on the substrate, wherein the alignment mark is used to position the projected area of the optical mask. Note that the first chevron serves as the alignment mark for the other chevrons as shown in Fig. 1.

Regarding claims 3, 6, and 10, the mask used in **Im** necessarily has the alignment pattern mark, otherwise the alignment mark could not be made in the a-Si film by laser crystallization. As shown in Fig. 1, the alignment mark is visible based upon the differences in the optical characteristics of amorphous, polycrystalline, and single crystal silicon.

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Regarding claim 4, the **Im** Fig. 1 shows the plural positionings of the laser relative to the substrate is performed based upon the alignment mark because there is shown a regular, repetitive patterns of chevrons.

Response to Arguments

5. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 703-306-5980. The examiner can normally be reached on 9:00 - 19:30 on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr., can be reached at 703-308-4940. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Erik Kielin
November 7, 2002